DOCUMENT RESUME

ED 374 628 EC 303 353

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TITLE District 75/Citywide Technology Solutions Program, 1992-1993. OER Report.
INSTITUTION New York City Board of Education, Brooklyn, NY. Office of Educational Research.
PUB DATE 13 Sep 93
NOTE 30p.; Prepared by the Student Progress Evaluation Unit.
AVAILABLE FROM Office of Research, Evaluation and Assessment, 110 Livingston St., Room 734, Brooklyn, NY 11201.
PUB TYPE Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Assistive Devices (for Disabled); Augmentative and Alternative Communication; Communication Aids (for Disabled); Computers; Computer Software; *Educational Technology; Elementary Secondary Education; *Inservice Teacher Education; Microcomputers; Participant Satisfaction; Program Effectiveness; Program Evaluation; *Severe Disabilities; *Technical Assistance; Urban Education; Workshops
IDENTIFIERS New York City Board of Education

ABSTRACT

The Adaptive Technology Program established five Adaptive Technology Centers (ATCs) in each of the five boroughs of New York City in 1990. These centers house various state-of-the-art technologies designed to enhance the functioning of students with severe disabilities. Equipment includes assistive devices, augmentative communication systems, adaptive computer hardware, peripherals, and software. The ATCs also provide technological support and training in the use of the equipment to school system staff responsible for the educational development of these students. The program also operates a Vision Resource Center, a Hearing Resource Center, and the Access Tech component, which provides on-site environmental assessment in the classroom, workplace, and home. Evaluation of the 1992-93 program via a survey of 110 users revealed that 3,380 students had benefitted from services provided by the ATCs. Teachers, therapists, paraprofessionals, and parents used the ATCs for information and training and to borrow equipment. In general, respondents were very satisfied with the availability of materials and equipment and with the responsiveness of the ATCs to their needs. ATC training workshops were perceived as well-organized and thorough. Users evaluated the ATC workshops positively. (JDD)

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OER Report

DISTRICT 75/CITYWIDE

TECHNOLOGY SOLUTIONS PROGRAM

1992-1993

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DISTRICT 75/CITYWIDE

TECHNOLOGY SOLUTIONS PROGRAM

1992-1993

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SUMMARY

During the 1992-1993 school year District 75 continued the Adaptive Technology Program initiated in 1990, which established five Adaptive Technology Centers (A.T.C.s)--one in each of the five boroughs. These centers house various state-of-the-art technologies designed to enhance the functioning of students with severe disabilities who were formerly served in state-operated or state-supported schools or institutions for the handicapped. The state-of-the-art equipment available at these centers includes assistive devices, augmentative communication systems, adaptive computer hardware, peripherals, and software. The centers also provide technological support and training on the use of this equipment to District 75 staff responsible for the educational instruction and development of these students.

In addition to the five A.T.C.s, a Vision Resource Center and a Hearing Resource Center in Manhattan provide technological resources and training specific to the visually-impaired and hearing-impaired student populations. A new resource, known as the Access Tech component, provides on-site environmental assessment in the classroom, the workplace, and the home. A van and a workshop are available to the program to facilitate fabrication of equipment.

The Office of Research, Evaluation, and Assessment (OREA) evaluated the 1992-1993 program. Evaluation activities included surveys of workshop participants, A.T.C. coordinators, daily A.T.C. users (non-workshop participants), and Access Technician users. Follow-up surveys were sent to a random sample of workshop participants.

The 110 respondents to the user survey reported that a total of 3,380 students had benefited from the services provided by the A.T.C.s. Fifty-seven percent of the respondents checked "information" as the most frequent reason for coming to the center, 30 percent received computer training from an A.T.C. (in a non-workshop setting), and 22 percent indicated that they sought to borrow equipment from the centers. More than one-third (39 percent) of the respondents indicated that the services would either assist them in their teaching or assist them with purchasing equipment. In general, respondents were very satisfied with the availability of materials and equipment and the responsiveness of the A.T.C.s to their needs. Eighty-seven percent of those surveyed gave A.T.C.s the highest possible overall rating of 5.

All aspects of the A.T.C. workshops received an average rating close to 5 on a five-point scale. Respondents viewed the workshops as well organized and thorough, providing ample

opportunity to ask questions and helpful material. Respondents noted that particularly useful aspects of the workshops were the hands-on experience, and explanations of the software, hardware, and communication devices.

Follow-up survey respondents reported that they introduced devices at school sites and trained other staff on how to use them, and that school programs had been enhanced by installation or improvement of computer programs. School staff collaborated on equipment to be used with specific students, and developed curriculum for use with the new technologies. Respondents rated the extent to which the information acquired through A.T.C. workshops was implemented with the students as close to 4 on a five-point scale.

A.T.C. coordinators reported that the centers served over 2,000 people during 1992-93 and offered over 30 types of workshops including Introduction to the MacIntosh Computer, laser disc seminars, and a variety of adaptive technology workshops. They also provided on-site services, such as curriculum workshops, assistance with purchasing, technical assistance, trouble-shooting, and CD-ROM assistance. The majority of participants in these workshops were teachers, therapists, paraprofessionals, and parents.

Services provided to schools by the access technician included technical assistance, repair or adaptation of equipment, answering questions, providing augmentative or alternative communication devices, and loaning equipment. Ratings of the services by participants were highly positive.

OREA recommends that the program:

- continue the activities at the A.T.C.s, including workshops and the provision of materials;
- continue to provide mobile services by the highly regarded Access Tech Component; and
- provide workshop follow-up activities at the school level to support the activities begun at the center workshops.

ACKNOWLEDGMENTS

This report was prepared by the Office of Research, Evaluation and Assessment's Student Progress Evaluation Unit (OREA/S.P.E.U.) under the direction of Dr. Henry Solomon. This report represents the efforts of many individuals. Dr. Shelley Ast served as project coordinator, and collected the data for this report. Connie Blunden and Dr. Renee Schmerler analyzed the data and Connie Blunden wrote the report. Editorial assistance was provided by Carol Meyer.

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I. INTRODUCTION

PROGRAM DESCRIPTION

During the 1992-1993 school year District 75 continued the Adaptive Technology Program initiated in 1990, which established five Adaptive Technology Centers (A.T.C.s)--one in each of the five boroughs. These centers house various state-of-the-art technologies designed to enhance the functioning of students with severe disabilities who were formerly served in state-operated or state-supported schools or institutions for the handicapped. The state-of-the-art equipment available at these centers includes assistive devices, augmentative communication systems, and adaptive computer hardware, peripherals, and software. The centers also provide technological support and training on the use of this equipment to District 75 staff responsible for the educational instruction and development of these students.

In addition to the five A.T.C.s, a Vision Resource Center and a Hearing Resource Center in Manhattan provide technological resources and training specific to the visually-impaired and hearing-impaired student populations. These centers will also be referred to as A.T.C.s throughout the report.

A new resource known as the Access Tech program was made available to staff. Access Tech is designed to provide on-site assistance in the classroom, the workplace, and in the home. A van and a workshop are available to the program, making it easier to serve staff and families.

EVALUATION METHODOLOGY

The Office of Research, Evaluation, and Assessment (OREA) evaluated the 1992-1993 program. The thrust of the evaluation was to measure the effectiveness of staff development related to the use of A.T.C.s as resource and training centers. Evaluation activities included a survey of participants in workshops to determine the effectiveness and usefulness of workshops provided to staff. A random sample of workshop participants was sent follow-up surveys in order to assess the practical application of information covered in workshops. A.T.C. coordinators were surveyed to obtain their assessment of program implementation, workshops, on-site materials, etc. OREA also surveyed daily A.T.C. users to estimate the centers' usefulness to non-workshop participants. Access Technician users were asked to respond to questions designed to measure the value of this service.

REPORT FORMAT

The body of this report presents OREA's findings for the 1992-1993 program in four chapters. Chapter II describes program implementation, Chapter III presents program outcomes, and Chapter IV provides OREA's conclusions and recommendations for future implementation of the program.

II. PROGRAM IMPLEMENTATION

The A.T.C.s served several functions during the 1992-1993 program year. Many of these functions were fulfilled on a daily basis. The most common daily functions of the A.T.C. were lending equipment, providing computer training, providing information, and assistance with augmentative devices.

In addition, A.T.C.s organized various workshops intended to provide staff and parents with opportunities to enrich their knowledge of technology programs and resources. Workshops included training in computer software, laser discs, board maker, braille, and wolf training.

The Access Technician was a new aspect of the Technology Solutions Program for 1992-1993. The aim of this service was to supply staff with an extra, mobile resource. The Access Technician provided on-site technical assistance, supplied augmentative or alternative communication devices, gave information, made repairs or adaptations to equipment, and loaned equipment.

III. PROGRAM OUTCOMES

A.T.C. User Surveys

During the 1992-1993 school year, OREA surveyed individuals who sought a service from the A.T.C. such as borrowing equipment, receiving computer training, or information-gathering. Respondents were asked to comment on how often they used the A.T.C., what types of services the A.T.C. provided, how they used the services they received, and how many students benefited from the A.T.C.. Each user was also asked to rate the quality of the A.T.C. services in regard to staff responsiveness, knowledge, availability of materials and/or equipment, quality of materials and/or equipment, and center hours. Finally, users were asked to give the A.T.C. an overall rating. Additional comments were also recorded. (See Table 1)

Of the 110 responses to the surveys, 60 percent identified themselves as teachers. Other respondents included parents, assistant principals, and speech personnel. The respondents reported that a total of 3,380 students had benefited from the services provided by the A.T.C.s.

Respondents indicated that they used A.T.C.s to acquire information. Of the 110 respondents, 57 percent checked "information" as the most frequent reason for coming to the center. In comparison, 30 percent reported receiving computer training from an A.T.C. (in a non-workshop setting), 28 percent indicated they sought augmentative assistance, and 22 percent indicated that they sought to borrow equipment from the centers.

Table 1

A.T.C. User Survey
(N = 110 respondents)

Participants Position	N	Services Sought[a]	%	Use of Service	N	Average Quality Rating[b]	
Teachers	66	Information	57	Assist in teaching	28	Responsiveness	4.9
Administration	9	Computer Training	30	Assist in purchasing	16	Knowledge	4.8
Parents	5	Augmentative	23	To educate,train or demonstrate	15	Overall	4.8
Other	30	Borrowing Equipment	22	Improve knowledge	12	Availability of Materials	4.8
						Quality of Materials	4.8
						Center Hours	4.8

[a] Numbers do not equal 100% because respondents could provide more than one answer.
[b] Average rating based on a scale of 1 to 5, with 5 being the most positive answer.

When asked how they would use the services that were provided by the A.T.C., 39 percent of the respondents indicated that the services would either assist them in their teaching or help them in purchasing equipment. Other answers showed that the services would be used to generally improve their knowledge or to educate, train, and demonstrate.

Respondents rated the effectiveness of the A.T.C.s on a five-point scale, where five was the most positive answer. The results of these ratings are shown in Table 1. In general, respondents were most satisfied with the responsiveness of the A.T.C.s to their needs, but no aspect of the program received a mean rating of less than 4.8 on a five-point scale. Eighty-seven percent of those surveyed gave A.T.C.s the highest possible overall rating of 5.

Although most of the responses to the A.T.C.s were positive, 21 percent of the respondents indicated that there was a need for on-site visits, and 13 percent said that A.T.C. hours needed to be extended. Other comments included a need for more specific programs and for more training.

A.T.C. Workshop Surveys

OREA surveyed 881 workshop participants in programs organized by the A.T.C.s. The survey asked participants to rate the workshops in terms of the organization of the training, the opportunity to ask questions, how helpful the materials were, how useful the content was, and whether the training increased respondents knowledge of the topic. Each respondent also gave

the workshop an overall rating. Additional comments and suggestions were also recorded (see Table 2).

On a scale of 1-5, with 5 being the most positive rating, all aspects of the workshops received an average rating of 4.7 or better. Respondents viewed the workshops as well-organized and thorough. They felt that they had ample opportunity to ask questions and that the material had been helpful. Overall, the workshops presented by A.T.C.s during 1992-1993 received an average rating of 4.9, an almost perfect score.

Respondents noted that there were four particularly useful aspects to the workshops: the hands-on experience was valuable, the workshops introduced them to the software, the workshops helped them to understand hardware and communication devices, and they helped respondents learn more about different services that are available to them.

Suggestions for improving the workshops included more hands-on training, additional workshops, more demonstrations in the workshops, and more time allowed for the workshops so that participants don't have to try to do too much too fast.

A.T.C. Workshop Follow-Up Surveys

To assess the practical application of the material covered in A.T.C. workshops, surveys were sent to a random sample of workshop participants to measure the extent to which training information was implemented. OREA also asked respondents to comment on whether this information improved their delivery of service and what additional information would have been

Table 2

A.T.C. Workshop Survey
(N = 881 Respondents)

Participants Position	N	Workshop Topics	Average Quality Rating Across Workshops[a]		Useful Aspects of Workshop Most Frequently Mentioned
Teachers	450	Computer Software	Opportunity to ask questions	4.9	Hands on experience
Speech	201	Laser Disc	Organization	4.8	Introduction to software
Paraprofessional	83	Boardmaker	Helpfulness of materials	4.8	Understanding hardware
Coordinators	34	Braille	Topic Covered	4.7	Communication devices
Parents	19	Wolf Training	Overall	4.9	Learning about services
Other	94	Other			

[a]Rating is based on a 5-point scale, with 5 being the most positive response.

beneficial. Finally, OREA asked that respondents rate the usefulness of the training they had received, and recorded additional comments and suggestions.

Table 3 outlines the workshop follow-up survey responses. The table represents 34 workshops. Since the number of returns from individual workshops were varied and often small, the data for all returns were combined and evaluated across all workshops.

Respondents were asked how they implemented what was learned in the training (see Table 3). Respondents noted that information was shared with other staff and with students to help with communication, that the training ultimately enhanced school programs as a result of the initiation or improvement of computer programs, and that a new curriculum was developed as a result of the training.

OREA also asked respondents to rate the extent to which the information acquired through A.T.C. workshops was implemented with the students. The average rating was 3.9 on a 5 point Likert scale, with 1 being not at all implemented and 5 being fully implemented.

Survey respondents also reported greater and more effective use of the equipment with students, including more precision in matching devices to the students' needs, the use of innovative programs with students, and an increased use of switches and electronics.

Table 3
Workshop Follow-up Survey[a]
(N = 40 respondents)

How have you implemented what you learned in training?[c] N	How was training implemented with your students?	Average Quality Rating[b]	What changes in your delivery of service resulted from training? N	What else do you need to help with implementation? N
Shared information with other staff 23	Greater and more effective use of equipment with students.	Extent that information was implemented with students 3.9	Expanded use of equipment 26	Need more hands-on training and up-to-date workshops 6
Shared information with students to assist communication 13	Implemented innovative programs with students	Training's usefulness in reaching students' goals 3.9	Improved teacher training 6	Need more technical support and backup from ATC coordinators 6
Enhanced school's programs 4	Increased use of switches and electronics	Service's usefulness in reaching students' goals 3.7	Greater individualization of services 3	Need more time for instruction and practice 4
Developed new curriculum 1	Implemented communication boards and computers		More student social interaction 3	Need more training materials 4

[a] Table represents 34 workshops. Since the number of returns from individual workshops were varied and often small, the data for all returns were combined.
[b] Average ratings based on a 5-point Likert scale, with 1 being not at all and 5 being very much.
[c] Respondents could give more than one answer.

The most frequent improvement made in the delivery of service was the expanded use of equipment. Other changes included improved teacher training, greater individualization of service to students, changes in student behavior such as more social interaction, and an increase in student motivation.

When asked what would further facilitate implementation, respondents indicated a need for more hands-on training with computers and more up-to-date workshops. They also requested technical support and follow-up by the A.T.C. coordinators. Respondents also indicated a need for instruction, as well as more time to practice using equipment.

Respondents characterized the A.T.C. coordinators as informative, supportive, cooperative, and available for troubleshooting. They suggested more training involving other staff members and parents, smaller groups with more hands-on activities, and extended hours at the Manhattan A.T.C.. They also referred to difficulties in traveling to and parking at the workshop site, and the lack of certain equipment at school sites, as areas that could be improved.

A.T.C. Coordinators Survey

A.T.C.s served over 2,000 people during 1992-93 and offered over 30 types of workshops. During the 1992-1993 school year, OREA surveyed the A.T.C. coordinators in order to assess the success of the individual centers, including the Hearing and Vision Centers. OREA asked coordinators to list workshops that were held at their site, report other on-site services, describe

how professional conferences attended by the coordinator were useful, and explain future goals for their A.T.C. (see Table 4).

The data provided by the A.T.C. coordinators regarding workshops echoed that of the workshop participants. Coordinators reiterated that the workshops offered included Laser Disc, Introduction to the MacIntosh, Overview of Adaptive Technology, and Introtalker, among others. In addition to the workshops provided by the A.T.C.s, each center offered on-site services, which included curriculum workshops, assistance with purchasing, technical assistance, trouble-shooting, and CD ROM assistance. Suggestions for change included requests for additional space and staff in order to better serve their communities; one coordinator suggested that school staff be granted training pay for workshops attended after school and on weekends.

Several coordinators also attended professional conferences, including Closing the Gap, Abilities Expo, Mac World, and Optical Data Presentation Skills. Coordinators reported that the conferences helped introduce them to the latest products, expanded their expertise, and improved their presentation skills. After the conferences, the coordinators said that they were better able to inform their users by passing the new information on to their staff and incorporating it into their workshops and presentations.

Table 4
A.T.C. Coordinator Survey[a]
(N = 6 Respondents)

What type of workshops were provided?	What on-site services do you provide?	Comments and Suggestions	How did professional conferences help coordinators?	Future Goals
Laser disc Introduction to the MacIntosh Computer Overview of adaptive technology IntroTalker Miscellaneous	Curriculum workshops Ordering information Site technology evaluation Technical assistance Software assistance Trouble-shooting CD ROM assistance Other	Could use additional space and assistance Need training pay for school staff (after school and on the weekends)	Introduced to latest products Expanded expertise Improved presentation skills Provided new information to be passed on to staff	Increased public relations Continue services and training Develop special need user groups

a: Comments are presented without numbers or percentages due to the small sample size.

Coordinators indicated that their goals were to meet the technological needs of the schools and to provide instruction and training to staff, as well as students. They achieved this by offering workshops such as Introduction to the MacIntosh Computer, laser disc seminars, and a variety of adaptive technology workshops. The majority of participants in these workshops were teachers, therapists, paraprofessionals, and parents.

Coordinators listed increased public relations for the center, continued services and training, and developing special need user groups as future goals for their A.T.C.s. Most coordinators are seeking to maintain and improve the high quality of computer training and software review currently in existence at the centers.

Access Technician Surveys

During the 1992-1993 school year, OREA surveyed individuals who used the access technician as a resource in their positions. The survey was designed to establish the types of services provided by the access technician, the use of the services he provided, the number of students that benefited from his services, and which I.E.P. curriculum areas were addressed as a result. OREA received 21 responses and found that, in general, the access technician provided a valuable service to those who sought his assistance (see Table 5).

Respondents estimated that 156 students benefited from this program last year. Technical assistance, repair or adaptation of

equipment, answering questions, providing augmentative or alternative communication devices, and loaning equipment were among the major functions of the Access Tech. Several respondents indicated that they had used the access technician for fabricating equipment ranging from ramps and paper-folding fixtures to lab trays and stapling devices.

Participants were asked how they will use the services they received. Some answers indicated that the services would be used on an on-going basis at the job site or in the classroom. Others said that the service would help in setting up communication devices and training students on switch control. Most felt that the service would increase the independence and vocational potential of the students involved.

The three most commonly cited I.E.P. curriculum areas addressed with the help of the access technician were communication and/or language development, vocational, occupational and/or work study, and reading, writing and/or math. Other less frequently mentioned answers included accessibility and/or travel, socialization, and meals.

Participants were asked to rate the quality of the access technician program. Ratings were based on a scale of 1 to 5 (where 5 is the most positive answer) and evaluated responsiveness, technical knowledge, availability of materials, quality of materials and timeliness of unit's response. The respondents gave generally positive ratings to the program. No service received an average quality rating less than 4.7.

Table 5
Access Technician Survey
(N = 21 Respondents)

Participant's Position	N	Service(s) Received	N	How will the services received be used	N	Average Quality Rating Across Sites[a]	
Teacher	5	Technical assistance	12	On-going use of equipment on the job site	7	Technical knowledge	4.9
Speech	5	Repair/adaptation of equipment	12	Assist in communication device	5	Responsiveness	4.8
Job developer	3	Information	8	Increase independence and vocational potential	4	Availability of materials	4.8
Physical therapist	2	Augmentative/ alternative communication devices	8	In the classroom	2	Quality of materials	4.8
Other	6	Borrowing equipment	6	To train students on switch control	2	Timeliness	4.7
		Other	7			Overall	4.7

[a]Ratings based on a 5-point scale with 5 the most positive.

IV. CONCLUSIONS AND RECOMMENDATIONS

The Technology Solutions program fully implemented its Adaptive Technology Centers during the 1992-1993 program year. Funded by P.L. 89-313, the program provided information and hands-on training at the centers, as well as workshops on specialized topics. The program also successfully mounted an Access Tech component--a mobile help unit that provided on-site technical assistance, troubleshooting activities, and material directly at the school level.

Responses by the workshop participants, center users, and those benefiting from Access Tech services indicated that the activities were highly successful. Follow-up data suggested that the material and information provided by the program was successfully implemented by the participants in most cases, and benefited students at least indirectly.

OREA recommends that the program:

- continue the activities at the A.T.C.s, including workshops and the provision of materials;
- continue to provide mobile services by the highly regarded access tech component; and
- provide workshop follow-up activities at the school level to support the activities begun at the center workshops.